BY ORDER OF THE COMMANDER
434TH AIR REFUELING WING

434TH AIR REFUELING WING
INSTRUCTION 21-107

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Maintenance

AIR TRAFFIC CONTROL EQUIPMENT MAINTENANCE, RESTORATION, AND COORDINATION

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This instruction implements Air Force Policy Directive (AFPD) 21-1 *Air and Space Maintenance*, Air Force Instruction (AFI) 13-203, *Air Traffic Control*, and AFI 13-204, *Functional Management of Airfield Operations, Chapter 4.* It establishes the responsibilities and procedures for reporting interruptions, malfunctions, restoration priority and response times for all work centers within the 434th Communications Squadron (CS), and necessary coordination between offices involved in those actions. This instruction applies to the Air Traffic Control (ATC) and Landing Systems (ATCALS) Maintenance and Air Traffic Control agencies on Grissom Air Reserve Base; and attachments 3, 4, and 5 will also apply to Grissom's Command Post, Airfield Management and Weather Station. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the Air Force (AF) Form 847, *Recommendation for Change of Publication*; route AF Form 847s from field through Major Command (MAJCOM) publication/forms managers. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with Air Force Records Disposition Schedule (RDS) located at **https://www.my.af.mil/gcss-af61a/afrims/afrims**. The use of the name or rank of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

SUMMARY OF CHANGES

This revision has removed legacy systems Airport Surveillance Radar (ASR), Programmable Indicator Data Processor (PIDP), AN/TPX-42 Interrogator System, and Digital Bright Radar

Indicator Tower Equipment (DBRITE) and added new systems (Standard Terminal Automation Replacement System (STARS) and Digital Airport Surveillance Radar (DASR) affecting attachments 3, 4, and 5.

1. Scope: Establishes the responsibilities, coordination, and procedures for reporting interruptions, malfunctions, NO-NOTICE Preventative Maintenance, and response times for outages in work centers under the 434th CS ATC and Landing Systems (ATCALS) maintenance responsibility. It also establishes the restoration priorities. Whenever an operational mission requirement dictates an amendment of the Preventive Maintenance Inspection Preventative Maintenance Inspection (PMI) schedule for ATCALS in (See **Attachment 2)**, the Chief of Maintenance (COM) will make the request for change to the Airfield Operations Manager (AOM).

2. Scheduled Maintenance:

2.1. Prior to releasing equipment for scheduled PMI's, (See **Attachment 2)**, ensure the following actions have been completed:

2.1.1. ATC Watch Supervisor (WS)/Controller-in-Charge (CIC) will access the current and forecasted weather conditions. Current weather will be reported at a 3000ft ceiling and 5 miles visibility. Forecasted weather will be at least 3000ft ceiling and 5 miles visibility thru the period the requested ATCALS equipment is to be withdrawn from service.

2.1.2. WS/CIC will assess the current and known forecasted traffic conditions within Grissom's delegated airspace thru the forecasted PMI period.

2.1.3. After release WS/CIC will advise effected agencies the ATCALS equipment has been removed from service.

2.1.4. No more than one ATCALS facility will be normally released for PMI's at a given time. The exception to this are the Instrument Landing System (ILS) facilities installed at opposite ends of the runway.

3. Unscheduled Maintenance:

3.1. Significant downtime request of ATCALS equipment that will impair the flying mission will be coordinated as far in advance as possible with the Airfield Operations Manager or in his absence the Air Traffic Manager (ATM) during normal duty hours Monday-Friday, 0730L to 1530L. This will allow the AOM/ATM to sufficiently coordinate the request and obtain Operations Group (OG/CC) approval. The following should be provided if known: ATCALS system affected, estimated start work day, estimated time the ATCALS equipment will be removed from service, and if Flight Check will be required.

3.2. Non-significant downtime request of ATCALS equipment that will not impair flying mission - the requested equipment has a redundancy (backup equipment to take the place of the primary equipment) and/or the ATCALS equipment can be brought back to service in a moment notice - will be coordinated with WS/CIC and released at the discretion of the WS/CIC.

3.3. Maintenance request for significant ATCALS downtime outside normal duty hours will be coordinated thru the Watch Supervisor/Controller-in-Charge (WS/CIC). ATC WS/CIC will give notice of the specific equipment requested and downtime to the appropriate

agencies i.e.; Command Post for relay to 434th OG or designated representative. ATC WS/CIC will defer maintenance downtime request until approved by the OG/CC or designated authority.

3.4. Emergency conditions that warrant the immediate withdraw of Grissom's ATCALS equipment will be immediately reported to WS/CIC through the COM with the final determination and coordination to shut down the ATCALS equipment by ATC.

3.5. When manpower or other limitation to resources does not permit simultaneous repair of multiple ATCALS outages, the restoral priorities listed in (See **Attachment 4)** will be adhered to unless otherwise specifically coordinated between the COM or a designated representative and the customer.

3.6. The RAPCON is designated as the primary Notices-to-Airmen (NOTAM) monitor facility and serves as the focal point for all information concerning ATCALS performance. ATC WS/CIC will advise Airfield Management for NOTAM dissemination and/or airfield advisory, and Federal Aviation Administration (FAA) affected agencies if approved.

3.7. To maximum extent possible, planned interruptions of ATCALS will be scheduled during periods which ensure the least impact to operational flying activities.

4. Responsibilities and Coordination:

4.1. ATC will:

4.1.1. The WS/CIC will ensure that the equipment outage and completion of the requested equipment downtime is appropriately logged in the RAPCON and/or Control Tower Facility Event Log.

4.1.2. The WS/CIC will notify ATM when equipment identified in paragraph 4.1.1. returns to operational service.

4.1.3. When requests for unscheduled ATCALS equipment downtime are denied such as for less than adequate weather, the WS/CIC will ensure that the ATCALS technician is afforded an alternate time table and that time is coordinated prior as noted above.

4.1.4. Notify ATM/ATCALS Maintenance of all interruptions/malfunctions of assigned equipment/systems that will affect Approach Control Operations (ACO).

4.1.5. The Supervisor on duty will log out the affected equipment with ATCALS at extension 688-4444 Airfield Systems and/or 688-3135 (Radar) (after normal duty hours follow equipment restoration priority list in (See **Attachment 4)** and call back procedures in (See **Attachment 6**). Immediately report the shutdown or failure of ATCALS to the NOTAM dispatch center (Airfield Management) to include RAPCON/TOWER published frequencies, Air Traffic Information Systems (ATIS), etc. Notify the ATM and Airfield Operations when equipment identified in paragraph 4.1. returns to operational service if a NOTAM is in effect.

4.1.6. Coordinate the release of ATCALS equipment that will affect approach control operations with the opposite facility prior to releasing the equipment to maintenance.

4.1.7. Notify the duty weather observer of any outage or suspected problems with the FMQ-19 digital winds readout equipment.

4.1.8. Verify equipment outage status with ATCALS at extension 688-4444 (Airfield Systems) and/or 688-3135 (Ground Radar) on weekdays, except holidays, between 0730-0830 local.

4.1.9. Report immediately the shutdown or failure of Radar Approach Control (RAPCON) primary frequencies and/or DASR to the tower and Chicago Air Routine Air Traffic Control Center (ARTCC).

4.1.10. Notify all affected facilities when wind velocity is forecasted or sustained at 55 knots or greater. Watch supervisor will implement procedures for free-wheeling the DASR antenna (See **Attachment 2**).

4.2. ATCALS will:

4.2.1. Ensure when the ATCALS facility is removed from service, the identification feature is turned off.

4.2.2. Coordinate approvals with the WS/CIC, who will in-turn notify other affected facilities if necessary when:

4.2.2.1. Maintenance requires shutdown of an operation position.

4.2.2.2. Equipment modifications or changes in technical data, which affect operator use of the equipment, are accomplished.

4.2.2.3. Federal Aviation Administration (FAA) flight check with "monitors" will render ILS out of service**.**

4.2.3. Radar maintenance will advise the RAPCON WS/CIC watch Supervisor or Controller when a situation precludes continued operation of DASR.

4.2.4. If a delay occurs between when the approval is given for shutdown and the time the NAVAID actually will be shutdown, the ATCALS maintenance technician will again verify with the WS/CIC concurrence prior to taking the affected ATCALS facility off the air.

4.2.5. Maintenance technicians will contact the affected ATC facility prior to beginning maintenance on any online ATCALS equipment. Prior coordination is also required for maintenance activities, which may interfere with online equipment, i.e., testing spare radios on an operational frequency. No work may begin until ATC is contacted and releases the equipment to maintenance.

4.2.6. Maintenance technicians will inform the appropriate facility when maintenance action has been stopped/completed. The appropriate facility then determines the operational status of equipment and will notify ATCALS as soon as equipment operation is verified. Maintenance will return ATCALS component to ATC NLT the expiration of the scheduled downtime. This will ensure sufficient time for ATC checks and alignments.

4.2.7. Radar maintenance will advise tower prior to making adjustments to the Digital Airport Surveillance Radar (DASR), which may affect the performance of the TDW (Tower Display Workstation), unless safety of flight requires immediate action.

4.2.8. ATCALS Chief of Maintenance will coordinate ATCALS flight inspection activities and is the central point of contact for flight inspections and/or operational evaluation deficiencies. If flight check is going to be required following a maintenance activity, notify the ATM as far in advance as possible so appropriate scheduling can be accomplished with the OG, and Flight Inspection Field Office (FIFO).

4.2.9. Airfield Systems will coordinate with the tower and perform navigational aid evacuation (bailout) alarms checks in (See **Attachment 7)**.

4.2.10. ATCALS maintenance will respond to outages IAW response time requirements listed in (See **Attachment 5)**. In addition, specific instructional requirements are as follows:

5. ATC, Command Post, Airfield Management, and Weather Station: Normal ATCALS duty hours are defined as Monday through Friday, with core duty hours as 0900 – 1500 local (except for holidays). Specific start and stop times vary for each functional area. For after ATCALS duty hour's callback, see airfield systems (ATCALS) Maintenance after duty hour's callback procedures in (See **Attachment 6)**.

6. While performing ILS ground checks ATCALS Maintenance will comply with 434 ARWI 13-202, see (See Attachment 8; Controlled Movement Area Awareness- ILS Ground Checks.

WILLIAM T. CAHOON, Col, USAFR
Commander

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFI 13-203, *Air Traffic Control*

AFPD 21-1--*Air and Space Maintenance*

AFI 13-204, *Functional Management of Airfield Operations, Chapter 4*

Abbreviations and Acronyms

ACO—Approach Control Operations

AF—Air Force

AFI—Air Force Instruction

AFMAN—Air Force Manual

(AFSATCOM)—Air Force Satellite Communication

AFPD—Air Force Policy Directive

AOM—Airfield Operations Manager

ARW—Air Refueling Wing

ARWI—Air Refueling Wing Instruction

ASR—Airport Surveillance Radar

ATC—Air Traffic Control

ATCALS—Air Traffic Control and Landing Systems

ATIS—Automatic Terminal Information System

ATM—Air Traffic Manager

CE—Civil Engineering

CMA—Controlled Movement Area

COM—Chief of Maintenance

CS—Communication Squadron

DASR—Digital Airport Surveillance Radar

ETVS—Enhanced Terminal Voice Switch

FIFO—-Flight Inspection Field Office

IAW—In Accordance With

ILS—Instrument Landing System

LED—Light-Emitting Diode

MAJCOM—Major Command

NOTAM—Notice to Airmen

OPR—Office of Primary Responsibility

PIDP—Programmable Indicator Data Processor

PMI—Preventative Maintenance Inspection

PSR—Primary Surveillance Radar

RAPCON—Radar Approach Control

RCP—Radar Control Panel

RDS—Records Disposition Schedule

SCAMP—Single Channel Anti-Jam Manportable

SCDI—Site Control and Data Interface

SSR—Secondary Surveillance Radar

STARS—Standard Terminal Automation Replacement System

TDW—Tower Display Workstation

WS/CIC—Watch Supervisor/Controller-in-Charge

Attachment 2

SCHEDULED PREVENTIVE MAINTENANCE INSPECTION

Systems	**TIME** (Local)	**DAY**
FRN-44	0800-1000	Tuesday
FRN-45	0800-1000	Tuesday
GRN-29	0800-1000	Thursday
GPN-30	0700-0900	Monday
FSQ-208 (STARS)	0700-0900	Wednesday

Attachment 3

PROCEDURES FOR FREE-WHEELING/STOPPING THE DASR ANTENNA

A3.1. Ensure that the Radar Control Panel (RCP) has control.

A3.2. Determine which channels of the Primary Surveillance Radar (PSR), Secondary Surveillance Radar (SSR), and Site Control Monitoring Interface (SCDI) are selected.

A3.2.1. Look at the SELECTED buttons/indicators.

A3.2.1.1. Green Light-Emitting Diode LED beneath A: Channel A is selected.

A3.2.1.2. Green LED beneath B: Channel B is selected.

A3.3. Place the unselected channels of the PSR, SSR, and SCDI into Maintenance mode.

A3.3.1. Press the PSR/SSR/ACDI A or B buttons for the unselected channels.

A3.3.1.1. LEDs will change to amber.

A3.4. Place the unselected channels of the PSR, SSR, and SCDI into Maintenance mode.

A3.4.1. Press the PSR/SSR/SCDI A or B buttons for the unselected channels.

A3.4.1.1. LEDs will change to amber. NOTE: If any of the channel LEDs illuminates red instead of amber or green, continue with the procedure. Even though red indicates a failed channel, the antenna can still be shut down.

A3.5. Press the Antenna button.

A3.5.1. LED will change from green to red, indicating the antenna has stopped rotating.

A3.5.1.1. Several buttons on the RCP will illuminate red, because stopping the antenna causes both the PSR and SSR transmitters to shut down.

Attachment 4

EQUIPMENT PRIORITY LIST

PRIORITY 1

AIRFIELD SYSTEMS:

AN/GRN-30 (Active Localizer)

AN/FRN-45

AN/FRN-44

AN/GRN-31 (Active Glide Slope)

RADAR:

DASR

STARS

AIRFIELD SYSTEMS *(GROUND RADIO):*

Air Traffic Control Radios

Command Post Radios

AN/FSC-125 Single Channel Anti-Jam Manportable (SCAMP) Radio, Fixed-Based

Air Traffic Control Recorders

PRIORITY 2

AIRFIELD SYSTEMS:

AN/GRN-30 (Inactive Localizer)

AN/GRN-31 (Inactive Glide Slope)

Automatic Meteorological Station (AN/FMQ-19)

AIRFIELD SYSTEMS *(GROUND RADIO):*

Flight Data System

ATIS (Automatic Terminal Information Service)

Base Operation Radio

Base Weather Radio

Command Post Recorder

Note: An active runway ILS system will always take precedence over an inactive runway ILS system.

Attachment 5

EQUIPMENT RESTORATION RESPONSE TIMES

A5.1. Operational capability is the ability of the assigned system to satisfy mission requirements and is defined as follows:

A5.1.1. Outage: Red-Ability of the equipment is limited or degraded to a point that mission requirements cannot be met.

A5.1.2. Impairment: Amber-Ability of the equipment is limited; however, mission requirements can still be met.

A5.1.3. Fully Operational: Green-Equipment is fully mission capable.

A5.2. The customer may determine that response to any priority is not required until the next duty day if adequate back-up capability exists to satisfy mission requirements.

A5.3. ATCALS technicians are not to exceed the listed response times unless unusual circumstances warrant a delay (i.e., weather, higher priority maintenance, etc.).

A5.4. Normal ATCALS duty hours are defined as Monday through Friday, with core duty hours as 0900-1500 (except for holidays). Specific start and stop times vary for each functional area.

A5.5. Response Times – During Normal ATCALS Duty Hours: The response times listed below may vary In Accordance With (IAW) paragraph 4.3.

Table A5.1. Response Times – During Normal ATCALS Duty Hours.

PRIORITY	RED OUTAGE	AMBER OUTAGE
1	NLT 1 Hour	NLT 1 Hour
2	NLT 1 Hour	NLT Next Duty Day

A5.6. Response Times – After ATCALS Duty Hours: The response times listed below may vary IAW paragraph 4.3.

Table A5.2. Response Times – After ATCALS Duty Hours.

PRIORITY	RED OUTAGE	AMBER OUTAGE
1	NLT 3 Hours	NLT 4 Hours
2	NLT 4 Hours	Next Duty Day

Attachment 6

ATCALS MAINTENANCE AFTER-DUTY-HOURS CALL-BACK PROCEDURES

NOTE: The call-back procedures will be utilized for calling in ATCALS equipment outages. This pertains only to systems listed in **Attachment 3**, equipment priority list. Systems include command post radios (except LMRs) and AFSATCOM) system, base operations radios (except LMR), and all air traffic control and landing systems equipment.

A6.1. Call ATCALS maintenance supervisor's cellular phone: Supervisor's cellular phone number will be made available.

A6.2. If no answer, call the ATCALS supervisor's home number. Home number will be made available. If no answer leave message on voice mail and wait ten minutes.

A6.3. If no response, call the communications squadron commander either at home phone number and/or cellular number. The numbers will be made available.

Attachment 7

PROCEDURES FOR TESTING THE EVACUATION ALARMS AT ILS SHELTERS

A7.1. The activation testing of the evacuation alarms (bailout alarms) at all ILS shelters will be scheduled and performed as part of the ATCALS maintenance routine PMI.

A7.2. Airfield Systems Technician will:

A7.2.1. Contact an ATC tower controller either by LMR or telephone to coordinate the evacuation-alarm test. Technician will coordinate with ATC tower controller to maintain radio contact and to assist with alarm activation.

A7.2.2. After coordinating, the technician will contact the tower again, by LMR or telephone at the ILS shelter to notify the controller to activate the evacuation alarms. Technician will wait and listen for alarm to sound at ILS shelter. After hearing the alarm, the technician will notify back to the controller that the alarm did or did not pass.

A7.2.3. Technician will proceed to another ILS shelter to perform test as outlined, and continue until all ILS-shelter alarms are checked.

A7.3. After completion of test, the technician will notify the controller that the test is completed. If an alarm test did not pass, maintenance will call in the discrepancy to base CE contract services and make necessary follow-ups until the discrepancy is corrected.

Attachment 8

CONTROLLED MOVEMENT AREA AWARENESS- ILS GROUND CHECKS

A8.1. ATCALS maintenance ILS ground check areas inside of the CMA includes the following areas:

A8.1.1. 23 Localizer near-field degree marks- *10/90 thru 10/150*.

A8.1.2. 05 and 23 Localizer *centerline* far-field markers

A8.1.3. 05 Glide Slope *phasing* marker

A8.2. CMA procedures, definition, and diagram are located in 434th Air Refueling Wing Instruction (ARW) 13-202 GRISSOM AIRFIELD FLIGHTLINE DRIVING PROGRAM and 434ARWI 13-201 (GRISSOM AIR RESERVE BASE AIRFIELD OPERATIONS.